Language Planning in Action: Depiction as a Driver of New Terminology in Irish Sign Language

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Abstract
In this paper, we examine the linguistic phenomenon known as 'depiction', which relates to the ability to visually represent semantic components (Dudis, 2004). While some elements of this have been described for Irish Sign Language, with particular attention to the 'productive lexicon' (Leeson and Grehan, 2004; Leeson and Saeed, 2012; Matthews, 1996; O'Baoill and Matthews, 2000), here, we take the analysis further, drawing on what we have learned from cognitive linguistics over the past decade. Drawing on several recently developed domain-specific glossaries (e.g., Science Technology Engineering Math[1] (STEM), Covid-19[2], political domain, Sexual, Domestic and Gender Based Violence (SDGBV)-related vocabulary) we present ongoing analysis indicating that a deliberate focus on iconicity, in particular, elements of depiction, appears to be a primary driver. We also outline some potential implications from Deaf-led glossary development work in the context of Machine Translation goals, for example, for work in progress on the Horizon 2020 funded SignON project.[3]

Keywords: Irish Sign Language, Depiction, Glossary Development, Sign Language Machine Translation

1.   Introduction and Background

Sign languages are not universal. They are naturally developing human languages (Fenlon and Wilkinson, 2015), which are typologically diverse; each sign language has its own lexicon and grammar.

1.1   Irish Sign Language

Irish Sign Language (ISL) is the indigenous sign language of Ireland. It is used by some 6,500 deaf people on the island of Ireland: 5,000 in the Republic and 1,500 in the North (Leeson and Saeed, 2012).

ISL is the third official language of Ireland, following adoption of the Irish Sign Language Act (2017). As Mohr and Leeson (in press) note, while formal recognition of ISL is a recent phenomenon, we can trace reference to signing in Ireland to at least the eighteenth century. Thus, ISL is not a 'new' language. (and see Leonard and Conama (2020) for additional discussion of same).

ISL has had many influences, arising from contact with British Sign Language (BSL), French Sign Language (LSF), ASL, French and English. Additionally, we can say that other influencing factors include gesture, educational policy (which has impacted on the language in many ways; see, for example, McDonnell and Saunders 1993), and new technologies.

1.2   Depiction

Sign languages are expressed in the visual-gestural modality, drawing upon a range of articulators to express and perceive a linguistic message (Vermeerbergen, Leeson and Crasborn 2007). Iconicity is a phenomenon that has received a great deal of attention in the sign language literature historically (e.g., Klima and Bellugi 1979, Brennan, Hughes and Lawson 1984, Brennan 1990, etc.).

Many terms in sign languages exhibit iconic mappings. Indeed, the iconic correspondences of many signs are clear even to non- signers. However only one set of these signs are said to have the ability to visually represent semantic components - depicting signs (Liddell 2003). In employing depiction, signers 'provide information about what an entity or event is like, what it looks like, or even what it acts like' (Thumann 2013, p. 316).

Depiction is not a phenomenon unique to sign languages. Speakers can also leverage depiction in taking on the role of other people, quoting their speech or imitating their actions. It can also have a significant semantic and possibly even grammatical role in a sentence (Lu and Goldin-Meadow 2018).

Dudis (2007) discusses the distinction between signs that depict and those that do not. The ASL sign for 'bird' (which is identical in ISL) is presented by Dudis as exemplifying an iconic but non-depicting sign: 'the manual articulator corresponds to the beak, its location to the location on the bird's head, and so forth. Yet, the sign does not function to describe what the bird looks like, nor does it function to describe the actions of a bird' (Dudis 2007, p. 1).

In contrast, Dudis illustrates how a signer describing a new light fixture in a kitchen known to the addressee, is an example of a depicting sign. Through the creation of a conceptual blend including a previously established mental space, Dudis explains that the signer depicts many features of this light fixture including its 'general bowl-like shape', 'the direction towards which certain sides of the fixtures or facing', 'the location...upwards and slightly away from the signer' (Dudis 2007, p. 11–12).

This example is indicative of how Dudis describes depiction in ASL as observed through the selective projection of Real-Space elements (Real Space meaning mental conceptualisations of a signer's current surrounding physical environment, which include the 'setting, vantage point, temporal progression, the subject, and the body' in

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combination with 'cognitive abilities including the ability to partition the body into several meaningful zones, to compress the setting and the time of the scenes being depicted, and to create simultaneous blends (Dudis 2007, p.19).

Dudis writes that from a cognitive linguistic perspective, 'when ASL verbs and constructions are shown to have components that depict semantic features, depiction becomes a focus of grammatical analysis' concluding his work by stating that it 'demonstrates the significant potential through further analysis for elucidating the role depiction has in ASL grammar' (Dudis 2007, p. 29). This statement provides significant justification and incentive for research on this linguistic phenomenon, particularly in relation to language development/evolution.

Against this backdrop, we note that in recent years we have seen a significant focus on the development of new terminology in sign languages in a variety of domains including (for ISL) terms around sexual, domestic and gender based violence (SDGBV); STEM; Covid-19; and political concepts.

1.3   Depiction: A Gesture Studies Approach

Identifying a gestural substrate for signs is not the same as saying that sign languages are 'just' gesture. Indeed, as Wilcox (2004) writes:

'Positing a gesture-language interface does not deny that signed languages are unique in important ways. Suggesting that signed languages are kin to gestures, or that developmental paths may lead from gesture to language, doesn't mean that signed languages are merely gestures. It simply means that the remarkable family resemblance between signs and gestures, and the tight integration of speech and gesture, point to a common ancestor' (Wilcox 2004, p. 67).

Drawing on the canon of gesture studies - and analysing this through a cognitive linguistic lens - provides us with contemporary and cutting-edge analytical tools through which to define and describe depiction strategies. This work also facilitates us in understanding the linguistic ideologies that help drive contemporary community decision making around new vocabulary, an issue that draws significant community interest and engagement (e.g., see Kusters, Green, Moriarty and Snoddon (2020)). In the Irish context, for example, a webinar organised by the Centre for Deaf Studies in September 2021 to discuss new vocabulary in ISL drew an audience of over 100 deaf people.

Our work in this space will also provide robust descriptions that can feed into the computational work required to prepare the machine translation element of the SignON communication.

1.4   SignON

SignON aims to reduce the communication gap between deaf, hard of hearing, and hearing individuals through a user-centred and community-driven approach, involving stakeholder-led user profiles from its inception.

To achieve this goal, the consortium is developing the SignON free and easy-to-use application and open-source framework to improve daily face-to-face communication and facilitate the fair, unbiased, and inclusive spread of information and digital content.

Funded by the European Commission's Horizon 2020 programme, the SignON consortium is developing SLMT approaches across a range of signed and spoken/written languages: ISL, Dutch Sign Language (NGT), Flemish Sign Language (VGT), Spanish Sign Language (LSE), as well as English, Dutch and Spanish oral languages. SignON is a project in progress that runs from 2021-2023 and comprises 17 partners from across Europe.

Through collaboration with European Deaf and hard-of-hearing communities, SignON researchers are (re)defining use cases and co-designing and co-delivering the SignON service and application. This communication service will be more than an advanced translation system: SignON aims to deliver signed conversations via a life- like avatar built with the latest graphic technologies.

At the heart of the SignON consortium's approach is a commitment to co-construction. From conception to implementation, Deaf community views are built into our approach. The SignON consortium includes deaf advocacy organisations and deaf academics.

The overall objective of the project is the fair, unbiased, and inclusive spread of information and digital content in European society.

2.   In Progress Linguistic Analysis of New Terminology ISL

As stated above, we are in the process of conducting a first pass linguistic analysis of new terminology in Irish Sign language from a variety of domain-specific glossaries: STEM, Covid-19, political domain, and SDGBV related vocabulary. Specifically, we are analysing these glossaries to identify the role of depiction within these vocabularies, and to define the depiction strategies for the purposes of the SignON project.

As part of our general analysis, our work will involve empirical data collection; we have recently received research ethics approval to conduct three focus groups with the following cohorts:

1. Deaf interpreting students at the Centre for Deaf Studies who were involved in generating the ISL sexual, domestic, and gender-based violence glossary as part of the Erasmus+ Justisigns 2 project and the ISL political signs glossary developed in partnership with the Houses of the Oireachtas (Irish legislature) across 2021.
2. Individuals involved in other glossary development processes (e.g., the DCU STEM glossary project; the Covid-19 glossary project; confirming the SDGBV glossary for the Erasmus+ Justisigns 2 project; those engaged in pushing for vocabulary use shifts (e.g., Black Lives Matter)).
3. Deaf community members who are interested in the topic of language change and new vocabulary.

These focus groups will be held between April-November 2022. The purpose of conducting focus groups with those who were actively engaged in the vocabulary development

process is to gain insight into conscious linguistic motivation around the prevalence of features we observed, of which depiction is a primary example. A focus group with Deaf community members who were not involved in these vocabulary development processes will help us document broader views around features that are preferred/disliked and will likely help us explore how gendered, generational, and perhaps other views may intersect with linguistic accessibility judgements.

Our key aims for the focus groups are as follows:

- To identify the guiding principles and linguistic motivators in the development of these new terms;
- To provide sociological context to the linguistic features identified in our feature analysis of the terms;
- To identify key concerns and views within the Deaf community of new (and continuously developing) terminology in a variety of different domains: SDGBV, STEM, Covid-19, and political domain.
- To stimulate a conversation with consideration of macro-level equality, diversity, and inclusion related matters in recent changes to the ISL lexicon (e.g., signs regarding race and ethnic groupings which tend to be contested).

Our key research questions, therefore, are as follows:

1. What were the linguistic motivations in the development process of new vocabulary in the domains considered for Irish Sign Language?
2. Were any sociological factors considered in the development of these new signs?
3. What are the views in the Deaf community in relation to how new terminology is/should be developed?
4. What bodies/groups in the community should be consulted?
5. Are there any key concerns regarding the development of new signs? If so, what are these? How could they be ameliorated?
6. How could feedback processes for proposed vocabulary items best be negotiated?
7. How/where/should/could new signs be shared with the community?

Horizon 2020 beneficiaries such as SignON are encouraged to make their research data findable, accessible, interoperable, and reusable (FAIR) and to follow the principle of data being 'as open as possible as closed as necessary'. In line with this ethos, we intend-and have research ethics approval- to film these focus groups, which will be conducted through ISL, and archive them online so they function as an open dataset (with the express permission of all participants).

ISL is an under-resourced minority language, particularly in terms of digital content. Our focus groups will be capturing conversations about ISL terminology in ISL. Most linguistic research into ISL is published in English: thus, archiving these focus groups will serve as a mechanism towards the process of repatriating the language to the community of origin in this area of research.

2.1 Data

Our analysis of the vocabulary is a work in progress. We have begun a preliminary analysis of vocabulary in the domain of DSGBV drawn from the Justisigns 2 project.[4] This glossary presents 80 SL terms in this domain, drawn from the Istanbul Convention: Action against violence against women and domestic violence. The Justisigns 2 project team is taking a co-construction approach to the glossary development process – draft items were shared with the wider community and currently, key stakeholder representatives are finalising terms that will be published in summer 2022.

Our analysis of new terminology in ISL, and this SDBV vocabulary specifically, is also at an interim stage.

Our goal is to identify key drivers underpinning new vocabulary development, specifically to explore whether (and if so, to what degree) depiction is one such driver. We will cross check this analysis with the focus groups.

2.2 Initial Analysis – Framework

Our linguistic analysis follows two distinct phases:

Phase 1: Feature Analysis

1. *Initialisation:* where the first letter of the English word is represented by a fingerspelled item from the ISL alphabet (McDonnell 1997).
2. *Depiction:* relates to the ability to visually represent semantic components (Dudis 2007).
3. *Arbitrary:* whereby no element of the form of the sign resembles aspects of its meaning (Meir and Tkachman 2018).
4. *Mouthing:* where the corresponding word of the surrounding spoken language is voicelessly mouthed (Boyes Braem and Sutton-Spence 2001).
5. *Metaphor:* 'the use of an item from one semantic domain in a different semantic domain in order to characterise the latter in terms of the former (Meir and Cohen 2018, p.1).
6. *Metonymy:* 'a cognitive and linguistic process through which we use one thing to refer to another' (Littlemore 2015, p.1).
7. *Body Partitioning:* where the signer subdivides their body to represent a number of different actors at the same time (Dudis 2004).
8. *Simultaneity*: where distinct lexical elements that are bound together in some form of syntactic relationship are produced independently and simultaneously in autonomous channels (Miller 1994).
9. *Compounding:* 'a compound is a combination of two free morphemes that form a new sign/word with a different (but related) meaning' (Sutton-Spence and Woll 1999, p.102).

Phase 2: Depiction Analysis

The framework that is being used in this research follows an integrated approach. We combine a taxonomy of gesture studies definitions of depiction which has been developed by English (forthcoming) following the work of, e.g. Müller (1998), Mason-Carro, Groudbeek and Kramer

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[4] https://justisigns2.com

(2016, 2017), and Hwang et al. (2017). Key elements include:

1. ***Handling:*** a transitive action involving imitating operating a tool or device.
2. ***Enactment:*** an intransitive action which entails imitating an action with no object use.
3. ***Portrayal:*** hands embody the item they portray.
4. ***Molding:*** hands sculpt a 3D shape. Two sub-groups are distinguished: static and dynamic. Molding static gestures enclose a shape with no movement involved while molding dynamic gestures depict an object's shape with hands in motion.
5. ***Drawing:*** the hand traces a shape or a trajectory.
6. ***Personification:*** Personification entails participants becoming the entity they wish to represent by "mapping the body of a non-human entity onto the human body, using the human head to represent parallel locations on a non-human head, the human body to represent a non-human body, and human appendages to represent nonhuman appendages" (Hwang et al., 2017 p. 576).
7. ***Placing:*** These gestures place an imaginary item in gesture space or inform about a spatial relation between two or more imaginary items.
8. ***Other:*** All other gestures are classified as "other".

We have added sign language specific considerations including how embodiment plays out in the semantic presentation of linguistic concepts and the significance of point of view (e.g., as in two possible signs for 'rape' illustrated in examples[5] 1 and 2 below, and see Leeson and Seed (2020)).

Example 1: RAPE (1) (ISL) - Agentive perspective[6]
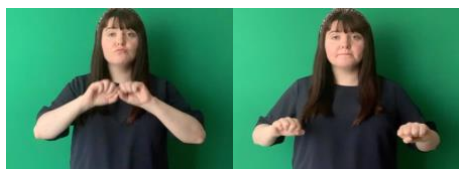
(a) RAPE 1 (onset)   (b) RAPE 1 (offset)

Example 2: RAPE (2) (ISL) - Patient perspective
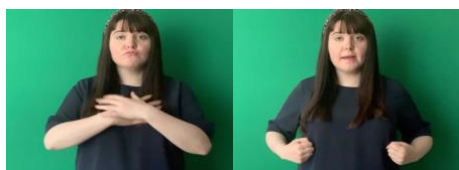
(a) RAPE 2 (onset)   (b) RAPE 2 (offset)

Adopting a gesture studies approach to the analysis of depiction in a sign language is novel. Work in this arena to date has tended to define depiction categories with reference primarily to sign language specific linguistic forms, for example depicting verbs (classifiers), surrogate

space (role shifts, constructed dialogue), token space, buoys (Cormier et al. 2012, Liddell 2003, Thumann 2013).

Our intent in adopting this integrated method to defining depiction strategies is twofold. Firstly, bringing a broader lens by including additional gesture dimensions will facilitate robust descriptions and categorisations of depiction. Secondly, this analysis will also provide a thorough examination of the relationship between the gestural substrate of ISL and depiction. We are also hopeful that we can build on the work of others, like Smith and Hofmann (2020) in identifying patterns of co-occurrence of features.

2.3   Initial Thoughts

This work represents an opportunity to delve into a period of deliberate language planning in progress. Our first pass analysis of this data points to a high incidence of depiction. We have identified depiction in 63% of established lexical items considered and in 91% of newly proposed lexical items. Thus far in our analysis, depiction has co-occurred with embodiment 100% of the time. We have observed instances of (proposed) semantic bleaching, specifically the lessening in iconic immediacy in visceral signs. For example, the third possible sign that was suggested for the term 'rape' does not make use of the body as the previous two proposed terms did, but rather makes use of a classifier. Interestingly, this sign was rejected by the stakeholder group signing off on the final lexicon to be adopted, with Examples 1 and 2 maintained.

Example 3: Rape (3) (ISL) - Classifier

(a) RAPE (onset)   (b) RAPE (offset)

2.4   Next Steps

Our primary focus over the coming months is to continue our data analysis and conduct our empirical data collection: engaging with those involved in the generation of new lexical items for special purpose glossaries and the Irish Deaf community at large through our planned focus groups. These are presented for the purpose of discussion and debate in addition to the purpose of gaining insights into the drivers of lexical creation in ISL (and prime discussion for other SLs).

While the knowledge we intend to gain from this work is important in its own right in relation to the role of linguistic motivation in language evolution, it is also is intended to serve a more immediate practical purpose: providing robust linguistic descriptions of depiction that will feed into the computational work required to prepare the machine element of the SignON partners until the end of the lifecycle of the project in 2023 and possibly beyond.

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[5]https://www.youtube.com/channel/UCVaVfZvPa16NWv jaupUmHeA for a full list of glossary terms

[6] Agentive and patient perspectives refer to distinct thematic roles denoting the initiator of some action and the entity affected by some action respectively (Saeed 2015).

3. Acknowledgements

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